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June 2, 2005

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Zhanna Chizhik v. Sea Hunt, Inc., et als.
(Boating Casualty of May 25, 2003)

Report Setting

[1] On May 25, 2003, three men went fishing in the outer harbor area of Boston, Massachusetts near the Boston Harbor Islands. They were in a 21'-6" boat manufactured by Sea Hunt, Inc. and propelled by an outboard motor. The boat model was a "Navigator 22" of model year 2003. The motor was turned off or in neutral, and the boat was allowed to drift while the three men were fishing. The sea conditions were choppy waves (6" - 2'), air temperature was about 63°F, water temperature about 52°F, the sky was overcast but with good visibility, and winds moderate at 7 - 14 MPH. Suddenly, at approximately 1:30 pm, the boat capsized, tossing all three occupants into the water. One man died (Grigory Chizhik), and the other two were injured but survived after being rescued (Amir Lashgari and Gregory Zilberman). Mr. Zilberman was the owner and operator of the boat. The boat eventually washed ashore and was battered into pieces by the waves and rocks. This report addresses the cause of the capsizing of the boat.

Information Sources

[2] In preparation for this report, the following documents specific to this matter have been considered. In the event additional pertinent information becomes available, I reserve the right to supplement or modify this report to take such additional information into account.

- Collier, Douglas A. Drawing entitled: "Sea Hunt 21'-4" Bay Boat." September 5, 1999.

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- Massachusetts Environmental Police. Massachusetts Boating Accident Investigation Report. May 25, 2003.
- Roof, Victor O. Deposition. May 25, 2005.
- Sea Hunt. About 13 pages of information about Sea Hunt boats. Various dates.
- Sea Hunt. Invoice# 9217. March 25, 2003.
- United States Coast Guard. Accident Report Data for 2003-MA-0048 and Accident Report Data for Vessel Manufacturer Sea Hunt – 1995-2003 (with cover letter). January 25, 2005.
- United States Coast Guard. Case Report – Case #: 118241 (with cover letter). May 25, 2003.
- United States Coast Guard. Letter to James O'Brien (and enclosures). January 26, 2005.
- Untitled drawing of boat. No date.
- Various. About 13 pages of newspaper articles on incident. Various dates.
- Zilberman, Gregory. Sea Hunt Boat Mfg. Co., Inc. Registration Card. May 3, 2003.

[3] In addition to reviewing those documents, I inspected and measured the same model boat, of model year 2004 (instead of 2003) on 25 April 2005. Photographs taken at the time of the inspection (#1 - 53) are attached hereto, and by reference are incorporated into this report. My measurements and inspection notes appear in attached **Exhibits 1 - 4**.

Description of the Boat

[4] The Sea Hunt boat model 'Navigator 22' is a fiberglass boat, fitted with an outboard motor. (Per the deposition of the president of Sea Hunt [p. 15/22], the 2004 model year is manufactured identically to the 2003 model year. Thus, the information derived from inspection and measuring of the 2004 model also applies to the 2003 model that capsized.) The boat is about 21'-6" total length, 8' in beam, and about 35" deep at the stern. The cockpit deck or sole is about 15" above the bottom of the boat, and the boat's loaded draft is about 12". The side of the cockpit is about 20" deep from the gunnel at the top to the cockpit sole. The boat is rated (per US Coast Guard regulations) to carry seven persons or 1050 lbs. of passengers with the fitted motor, or alternatively a total of 2000 lbs. of persons, outboard motor and gear.

[5] The boat is constructed with a self-bailing cockpit. This means that the deck or sole of the cockpit is above the outside waterline of the boat. Any water which gets into the boat will first get deposited onto that cockpit sole, from which it can drain overboard via the two drain lines located at the aft end of the cockpit.

[6] There is a volume beneath the cockpit sole but above the bottom of the hull. It ranges in height from about 13 inches at the aft end to zero at the forward end of the boat. Although

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that volume is mostly filled with structure and buoyant foam, there are still open areas or compartments as well. In the port side of the after end of those spaces, beneath the cockpit sole, is a bilge pump which can discharge out of the boat any water which collects in the vicinity of the bilge pump. The bilge pump can be manually activated, but is otherwise supposed to be automatically activated by a float switch near the bilge pump.

[7] There are several small hatches on the cockpit sole, leading to compartments beneath the cockpit sole. These under-deck compartments are interconnected so that any water that gets into them can flow all the way aft toward the bilge pump and be discharged overboard.

The Mechanics of Capsizing

[8] A boat can be lost to the sea by either sinking or capsizing. Sinking is a weight-and-buoyancy related matter. Sinking comes about from either too much weight being added to the boat; or by excessive loss of buoyancy if the hull is breached. In this matter, the boat did not sink; it remained afloat (albeit inverted) until it was beached by the winds and waves.

[9] Capsizing is an extreme form of heeling. (Heeling means inclining to one side or the other.) A boat that capsizes does so for a simple reason: loss of adequate stability. Stability is the net effect of the *positions* as well as quantities of buoyancy forces and weight forces. If a boat and its load (passengers, gear, water, fuel, etc.) are well-distributed, the center of gravity of all those weights is acting down at the transverse middle of the boat. When a boat is floating level, its buoyancy acts upward also through the transverse middle of the boat. Under such conditions, the boat floats upright without heel since the weight forces are directly countered by the buoyancy forces at the transverse middle of the boat.

[10] When the boat momentarily heels over to one side, the buoyancy is no longer symmetric, but is concentrated more to the side of the boat that is further down into the water. This arises because when heeled, a transverse section of the underwater section of the boat is no longer symmetric port and starboard. That extra buoyancy on one side only pushes the boat back towards its upright position.

[11] A boat can heel over due to two possible actions. First, a wave might cause it to heel, because as a wave passes under the boat, the height of the water beneath one side of the boat temporarily is not the same as beneath the other side. Thus, the buoyancy is temporarily not in the middle of the boat, but is more toward one side, even though the weights of the boat and its load have not moved. The second cause of heeling is a shifting of weights in the boat toward one side. If weights are moved to or added to one side of the boat, that side of the boat with its load is heavier than the other side. Thus, the boat will continue to heel toward that side until the

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buoyancy on that side equals the weights on that side; this comes about because, as above, when the boat heels over, the buoyancy is no longer symmetric.

[12] Capsizing is an extreme form of heel. It occurs when the transverse movement of buoyant and weight forces never get a chance to balance each other in a heeled position. This can arise due to more weight being moved over than can be supported by the available buoyancy. Another contributor to capsizing is upward movement of the center of gravity of the boat's load. This can be important because if the center of gravity moves up (such as by persons standing), then as the boat heels due to waves, the transverse location of the center of gravity will shift further toward the side than if it were lower.

[13] The subject boat capsized; it did not sink. The fundamental reason for capsizing was the loss of stability. That loss of stability could have come about through either (a) the shifting/addition of weights to one side of the boat, or (b) the upward movement of the center of gravity of the boat's load, or (c) some combination of those possibilities. The only additional weights available were from water entering the boat, presumably from waves, since there was no pre-casualty damage to the boat. The reason for the boat capsizing is discussed below.

The Effects of Free Water in Boats

[14] Boats can be designed for restricted service, such as to be used only in limited-size lakes and rivers, where no significant waves can arise. At the other extreme, a boat can be designed for ocean service where large waves are routinely encountered.

[15] When an open top boat operates in waves, water will inevitably get into the boat as some of the waves slap into the side of the boat. How much water gets in depends on the height of the side of the boat, the heel of the boat when that happens, and the height of the wave. If a boat bobs up easily as a wave approaches, less water will get in than if the boat is slow to bob up. The height and shape of the hull will be an important factor for that possibility.

[16] Once water is in the boat, the effect of the position of the water has to be considered as well. Excess water in wide boats, even if all the buoyancy is intact, serves to reduce the stability of the boat. If the water gets *confined* to a limited area, it cannot easily move about and cause the boat to heel. Alternatively, if the water is not confined, it can quickly move to one side of the boat. This will cascade the additional weight of the water to the side of the boat, causing it to heel quickly. This increases the heeling, and if it happens quickly, will lead to a significant rolling inertia.

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The Big Wave Theory -- No Rational Basis

[17] In his deposition, the president of Sea Hunt (V.O. Roof) stated (p.60/16) that he believed the boat capsized because it was in waves that were too big for the boat. A presence of a big wave is not the death knell for the survival of a small boat. The length of a boat is not important in such matters. For example, the traditional New England dory is only about 15 - 18 feet in length, but has been used in the open ocean for over a hundred years because it does not capsize or sink in the presence of large waves. The Navigator 22 is 20% -50% longer than a New England dory.

[18] The depth at the side of the hull of such a dory is about the same as that of the Navigator 22, namely about 34" - 36". The width or beam is another matter, as is the shape. The dory's maximum beam is only about 5 - 5½ feet, whereas the beam of the Navigator 22 is about 8 feet (or about 7 feet inside the boat). Further, the side of the dory is considerably sloped, whereas the side of the Navigator 22 is almost vertical. The dory is not fitted with an automatic bilge pump, nor does it have a self-bailing cockpit. Nevertheless, dories have survived ocean-sized waves for over a hundred years. This illustrates that the presence of a big wave by itself is not a determinant as to the survivability of a boat that is properly designed for its intended purpose or service. (For more information about dories, see attached **Exhibit 14**.)

[19] If a large wave caused the boat to capsize, then there must have been some specific mechanism arising from the large wave that caused it to capsize. But since boats capsize only due to a loss of sufficient stability, that means the wave must have had the effect of causing a loss of stability. The only means by which a wave can result in a loss of stability is if it caused water to enter into the boat, and the water was not drained or controlled adequately by the inherent characteristics of the boat; but instead the presence of the water made the boat unstable.

[20] When a designer/manufacturer puts his product into the marketplace, it has to be suitable for any and all possible forms of use that may be specifically described by the manufacturer, as well as for other reasonably foreseeable uses, too. Sea Hunt's advertising brochures for the Navigator 22 state that it is "*capable of running the flats or handling open coastal waters.*" However, there is no signage on the boat, and there is no owner's manual at all, to advise the user of what constitutes "*open coastal waters.*"

[21] Clearly, the boat was in open coastal waters when it was being used for fishing in outer Boston Harbor near the Boston Harbor Islands. How, then, could a wave have been too big for the boat when the boat was being used in exactly the type of area for which the boat was intended, namely, "*open coastal waters*"? Accordingly, any wave the boat encountered in those coastal waters, absent a tsunami or the like, could not have been too big for the boat if the boat was properly designed for the intended service in open coastal waters.

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[22] This brings about the questions: Were there any design features that meant the boat was not suitable for its intended service in open coastal waters? And were there any operational errors that contributed to the casualty? Several possibilities are considered.

Operational Consideration -- Standing of Three Persons

[23] If all three persons were standing, this would have raised the center of gravity of the load, reducing the stability. However, the boat was rated for seven persons, not three. When seated, seven persons would have a collective weight of about 1050 lbs. with the center of gravity at 27" above the deck. If standing, the three persons would have had a weight of about 460 lbs at 38" above the deck.

[24] The vertical moment (weight times distance) which affects stability is thus 2520 foot-lbs for the seven seated persons ($1050 \times 27/12$), compared to 1520 foot-lbs for three standing persons ($460 \times 38/12$). That is, the effect on stability of three standing persons is only two thirds the effect of seven seated persons for which the boat is rated. Thus, the issue of standing could not have contributed to the capsizing if the boat was properly suited for the rated seven persons.

Drain Lines

[25] If water got into the boat, it should have drained fairly rapidly by the self-bailing features. On this boat, the drain lines were two hoses of 1-1/2" inside diameter. Were these sufficient? The American Boat and Yacht Council ("ABYC") publishes standard H-4 that provides a formula for determining appropriate size of such drain lines for a self-bailing cockpit. Using that standard H-4, the calculation of the appropriate size of two drain lines for a self-bailing cockpit is shown in **Exhibits 5 - 6**.

[26] The appropriate size if only two lines are used is 3-1/2" inside diameter, not 1-1/2". The more important consideration is the total cross sectional area of the drain lines, which should have been 28.7 sq.in., but in fact was only 3.5 sq.in. That is, the available cross sectional area for drainage was only 12% of what it should have been. Thus, any water that got into the boat from a wave would take at least *eight times longer* to empty out than if the boat had proper self-bailing drains.

[27] The president of Sea Hunt (V.O. Roof) stated that he decided on the size and number of the deck drain lines (dep'n 40/11); and that he did so without consulting the ABYC or any other standards (dep'n 39/25). Inasmuch as he has no naval architectural training (dep'n 8/23), there was no rational basis for Sea Hunt's selection of the size and number of deck drain lines. Since Mr. Roof says the wave was too high, this means water got into the boat. Prompt drainage

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of that water would have considerably reduced the likelihood of its presence contributing to the capsizing of the boat.

Height of Sole Above Water Line

[28] Another factor in the speed of draining is the height between the inlet to the drain line and the water level outside the boat to which the drain lines empty. This is appreciated by realizing that if water has to drop, say, 8" it will be going faster than if it has to drop only 1". In order to drain, the sole of the cockpit has to be higher than the outside water level. How much higher should it be?

[29] Again, the ABYC standard H-4 provides for that determination. Specifically, the ABYC standard indicates that the sole of the cockpit should have been 4^{3/4}" above the waterline, but in fact was only about 3" above the waterline. This is shown in **Exhibit 7**. That is, the critical height difference between the cockpit sole and the waterline was only 63% of the appropriate value. This reduced height also contributed to slower drainage of any water that entered the boat.

[30] The president of Sea Hunt (V.O. Roof) stated that he decided on the height of the cockpit sole above the bottom of the boat (dep'n 41/20); and that he did so without consulting the ABYC or any other standards (dep'n 42/1). Inasmuch as he has no naval architectural training (dep'n 8/23), there was no rational basis for Sea Hunt's selection of the height of the cockpit sole above the bottom of the boat. This is another design feature that impeded the prompt drainage of any water that entered the boat. Such prompt drainage would have considerably reduced the likelihood of the water's presence contributing to the capsizing of the boat.

Water Within the Lower Hull

[31] As discussed in ¶¶ 6 & 7, there is some open volume within the hull below the sole of the cockpit. If any measurable amount of water accumulated in that area, it would serve to reduce stability, though likely not by itself lead to the capsizing. It would reduce stability because the loose water could slosh from one side to the other, thus acting as a weight being suddenly moved to the down side of the boat, increasing any heel even further.

[32] Although there are hatches in the cockpit sole, the total absence of an owner's manual meant that non-mechanical boat operators would not know enough to periodically check the tightness of those hatches. (Mr. Roof stated there was no owner's manual at dep'n 15/25 and

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16/2.) Thus, it is possible that water entering the boat got into that lower hull area before having the opportunity to drain overboard via the self-bailing features.

[33] Taking into account the structure and buoyancy foam in that area, the open volume is about 26 cubic feet, as calculated in Exhibits 8 - 13. With water weighing about 64 lbs per cu.ft., this could lead to the accumulation of considerable weight. Likely, not more than about half of that could accumulate before the bilge pump would activate even when the boat was trimmed down by the bow due to the three fisherman being closer to the bow than the stern. Half that volume corresponds to about 830 lbs. This assumes that the bilge pump was reliable and operable. (The total absence of an owner's manual meant that non-mechanical boat operators would not know enough to check the operation of the bilge pump before leaving the launching ramp or dock. Mr. Roof stated there was no owner's manual at dep'n 15/25 and 16/2.)

Beam and Shape of Boat

[34] The presence of the cockpit sole in the boat, for self-bailing purposes means that until it drains out, water which enters into the boat will be free to go to the extreme width of the boat's interior, creating a large heeling moment. To appreciate the adverse effect of this, consider the dory design depicted in Exhibit 14, in which the side of the boat slopes considerably. Thus any water that enters that boat drains down to a narrow bottom, not a broad, higher area as in the Navigator 22. This helps explain why the dory has such great survivability; and also explains why the Navigator 22 is put at risk when water enters the boat.

[35] The beam of the interior of the Navigator 22 is quite wide for most of the length of the boat. This means that any water that got into the boat from a wave would be able to go to the extreme beam of the cockpit over that length, creating a large heeling moment. To appreciate this, consider the dory design depicted in Exhibit 14, in which the beam of the interior of the boat quickly narrows both forward and aft of the middle of the length of the boat. This helps explain why the dory has such great survivability.

[36] When Sea Hunt under-designed the deck drains and under-designed the height of the cockpit sole above the water level outside the boat, the necessity of controlling and managing the water in the boat became more important. But the incorporation of a cockpit sole and the presence of the near-extreme beam for a considerable portion of the boat's length acted contrary to managing and controlling water which entered the boat.

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Depth of Boat

[37] The depth of the boat was a selected by Mr. Roof (dep'n 33/17). He selected a 20" gunnel height above the sole of the cockpit, which itself was 15" above the bottom of the boat. Considering his lack of qualifications in naval architecture, it might be suggested there was some rational basis for his selection of a 20" gunnel height above the cockpit sole of a boat that was intended for service in open coastal waters. He was asked, was that decision based on the anticipated limitations of where the boat would be used? He replied, "*Not necessarily.*" (dep'n 33/21.)

[38] Sea Hunt, under Mr. Roof's direction, manufactures an open boat (Triton 212) that is about 6" shorter than the Navigator 22. (The Triton 212 has the same 7-person, 225 HP ratings as the Navigator 22.) However, the Triton 212 has a hull depth 5" greater (25" vs. 20"). Mr. Roof also made that decision (dep'n 34/20). He was asked, is the depth of the hull an important factor in keeping green water out of the boat when there are waves? He replied, "*Yes. The depth would improve in that. Yes.*" (dep'n 35/3.)

[39] He was further asked, do you agree that when a drifting fishing boat is broadside to the waves it is more likely that the top of a wave could wash over the gunnel into the boat if the gunnel is lower than if it is higher? His reply: "*Yes.*" (dep'n 35/18.)

[40] Mr. Roof acknowledged that the height of the gunnel makes a difference in how easily green water can get into a boat. "*[If] water came over the side of one boat that's 20 inches, it would come over it easier than it would a boat that would be 25 inches tall ...*" (dep'n 36/25).

[41] As a basis for this difference in boat depth, Mr. Roof explained, "*The [Triton] 212 was built for more of offshore use. The Navigator 22 was built to have the ability to do more casting or any type fishing in which you would want to cast a rod.*" (dep'n 32/8.)

[42] Thus, while Sea Hunt, through Mr. Roof, acknowledged that the risks of taking on green water for the 20" gunnel height on the Navigator 22 were greater than on the 25" gunnel height of the similar sized Triton 212, he did not provide any other basis for that gunnel height design decision. Thus, what Sea Hunt has effectively determined is that persons who want to fish by using a casting rod are not entitled to the same level of safety from waves washing into the boat as persons who want to engage in offshore fishing.

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Summary

[43] Mr. Gregory Zilberman's Sea Hunt boat model Navigator 22 was being operated and used in waters that were within the areas of use intended for the boat's service, per Sea Hunt's representations.

[44] The boat was not being abused, nor was the boat being used in a manner that was not reasonably foreseeable by the boat manufacturer, Sea Hunt.

[45] Sea Hunt did not provide any owner's manual for the boat, and Sea Hunt did not affix any warning or caution signage to the boat.

[46] Design decisions as to dimensions of the boat, size of drain lines, height of the cockpit deck (or sole) and areas of intended use and service of the boat were made by the president of Sea Hunt.

[47] The president of Sea Hunt has no technical capabilities in the field of naval architecture.

[48] The relevant design decisions were made without reference to any industry or other standards.

[49] The boat did not capsize due to the loss of buoyancy arising from damage to the boat.

[50] The Sea Hunt boat model Navigator 22 did not capsize due to the possibility that the three occupants were standing.

[51] The Sea Hunt boat model Navigator 22 capsized due to the presence of water in the boat.

[52] Because the boat was drifting, it was broadside to the waves, and thus was not presenting its transom to incoming waves.

[53] The water in the boat could have come into the boat only by the action of one or more waves causing water to enter into the boat over the gunnel of the boat.

[54] Once water was in the boat, it could not drain out of the cockpit through the self-bailing drain lines with sufficient rapidity due to the drain lines having only 12% of the appropriate area.

[55] Once water was in the boat, it could not drain out of the cockpit through the self-bailing drain lines with sufficient rapidity due to cockpit deck or sole being only 63% of the appropriate height above the outside water level.

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[56] Up to several hundred pounds of water could have collected in the lower hull, below the cockpit sole, and not been evacuated by the bilge pump because the boat may have been trimmed down by the bow due to the distribution/weights of the three fishermen

[57] The lack of an owner's manual and the lack of any appropriate signage on the boat meant that the operator could not know the importance of keeping the boat trimmed down by the stern to ensure that water in the lower hull would be discharged by the bilge pump located at the aft end of the boat.

[58] The broad beam of the cockpit sole over a significant portion of the boat's length created a risk of loss of stability if water was allowed to accumulate in the boat without being rapidly drained.

[59] The boat did not incorporate features that effectively managed and controlled water that entered the boat due to the lack of proper drainage, proper height of the cockpit sole, and the broad beam of the cockpit sole over much of the boat's length.

[60] Water collecting in the lower hull would not have been detectable by the fisherman and its effect on the boat's stability would not have been noticed until it became critical to the boat's stability.

[61] The presence of water in the cockpit of the boat that did not rapidly drain, and/or the presence of water in the lower hull that did not get discharged by the bilge pump, meant that the stability of the boat would be degraded until it became critical, at which time the boat capsized.

[62] The height of the gunnel of the Navigator at 22" above the cockpit sole was 5" less than on a similar size Triton 212 model boat designed by the same person (V.O. Roof) and manufactured by the same entity (Sea Hunt).

[63] The stated rationale for the lower gunnel on the Navigator 22 relative to the higher gunnel on the Triton 212 was to allow for casting while fishing.

[64] The effect of the stated rationale for the lower gunnel on the Navigator 22 is that persons who want to fish by using a casting rod on a Navigator 22 are not entitled to the same level of safety from waves washing into the boat as persons who want to engage in offshore fishing aboard a Triton 212, although the boats are about the same length and have the same ratings of 7 persons and 225 HP.

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Conclusions

[65] The Sea Hunt 2003 model boat Navigator 22 was not fit for its intended use in open coastal waters, was not seaworthy, was in a defective condition, and was unreasonably dangerous to the user due to the lack of an owner's manual and lack of warning and cautionary signage on the boat.

[66] The Sea Hunt 2003 model boat Navigator 22 was not fit for its intended use in open coastal waters, was not seaworthy, was in a defective condition, and was unreasonably dangerous to the user due to the fact that water having a significant effect on stability could accumulate undetected in the underdeck portion of the hull if the boat is trimmed down slightly by the bow.

[67] The Sea Hunt 2003 model boat Navigator 22 was not fit for its intended use in open coastal waters, was not seaworthy, was in a defective condition, and was unreasonably dangerous to the user due to the undersized drains for the self-bailing cockpit.

[68] The Sea Hunt 2003 model boat Navigator 22 was not fit for its intended use in open coastal waters, was not seaworthy, was in a defective condition, and was unreasonably dangerous to the user due to the sole or deck of the cockpit being too low in the hull relative to the outside waterline.

[69] The Sea Hunt 2003 model boat Navigator 22 was not fit for its intended use in open coastal waters, was not seaworthy, was in a defective condition, and was unreasonably dangerous to the user due to the gunnel being lower than appropriate, as confirmed by the same designer/manufacturer's design for the Triton 212, a boat of a similar size and the same ratings.

[70] Each of the above conclusions in paragraphs [65] - [69] are independent of the other. Each identified element of the design and manufacture of the Navigator 22 is, by itself, sufficient to support the stated conclusion, without reliance in whole or in part on any other conclusion.

[71] The opinions expressed herein are given with a reasonable degree of certainty in the field of naval architecture, maritime engineering and boating operations.

FISHER MARITIME TRANSPORTATION
COUNSELORS, INC.



Dr. Kenneth W. Fisher, President

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DR. KENNETH W. FISHER

EDUCATION

UNIVERSITY OF SYDNEY, Sydney, Australia.
Ph.D. (Engineering Economics), 1973.

UNIVERSITY OF MICHIGAN, Ann Arbor, Michigan.

Master of Science in Eng'g (Eng'g Mechanics, Naval Arch. and Marine Eng'g), 1966.

WEBB INSTITUTE OF NAVAL ARCHITECTURE, Glen Cove, New York. Bachelor of Science
(Naval Architecture and Marine Engineering), 1964.

FRANKLIN D. ROOSEVELT INSTITUTE of Maritime Studies, New York, N.Y. Certificate in
Admiralty & Maritime Law, 1980.

AMERICAN ARBITRATION ASSOCIATION, San Francisco, California. Certificate -
Advanced Commercial Arbitration Advocacy Institute, 1986.

PROFESSIONAL EXPERIENCE

FISHER MARITIME CONSULTING GROUP
1976 to Present

Liability Assessment: Since 1976, under Dr. Fisher's direction, the firm has analyzed the factual bases of over 200 marine torts and claims, including numerous personal injury cases. Dr. Fisher has been the primary analyst in about 150 of those cases. In addition to the preparation of his expert reports for nearly all of those cases, he has been deposed in about 75 of them, and he has testified extensively in federal and state courts in numerous jurisdictions in about 25 of those cases. He has been retained as expert witness for both defense and plaintiff.

Professional Seminars: Dr. Fisher has developed and presented over 40 seminars, *Liability Avoidance in Marine Design and Construction*. The general areas addressed include improved operational procedures, management procedures, design procedures and production quality controls.

Training: Dr. Fisher has developed and presented three training programs for the industry, which he has presented over 150 times to more than 2200 representatives of over 360 commercial firms and government agencies. The programs are: (1) *Contract Management for Ship Construction, Repair and Design*; (2) *Shipyard Management of the Customer and Contract*; and (3) *The Port Engineer's Course*.

Arbitration: As an Arbitrator for the American Arbitration Association, Dr. Fisher has conducted over 160 days of arbitration hearings between ship owners and shipyards in which total claims exceeded \$15 million. Usually he has been either sole arbitrator or chairman of arbitration panels, responsible for the determination of arbitration awards.

Fisher Maritime**Florham Park, NJ**

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Contract Management: Dr. Fisher has acted as Contract Manager or Assistant Contract Manager on behalf of commercial clients for major contracts.

Contract Development: Dr. Fisher has been the primary drafter of a number of contracts for ship construction and conversion/modification.

Planning: Since 1976, under Dr. Fisher's direction, the firm has assisted the international maritime industry in the planning, development, contracting, management and settlement of projects having individual values of hundreds of millions of dollars.

OTHER POSITIONS AND PRIOR EXPERIENCE

1996 - 2000 **WEBB INSTITUTE**

Glen Cove, New York

INDUSTRY PROFESSOR for M.Sc. Program (Ocean Technology and Commerce)

1973 - 1976 **JOHN J. MCMULLEN ASSOCIATES, INC.**

New York, New York

DIRECTOR, TRANSPORTATION SYSTEMS (1975 - 1976)
Transportation Sciences Division

SENIOR SYSTEMS ANALYST (1973-1975)
Management Sciences Division.

1972 - 1973 **KENNETH W. FISHER, CONSULTANT**

Tokyo, Japan

INDEPENDENT CONSULTANT to tanker designing and constructing shipyards in Japan and Korea.

1969 - 1972 **THE UNIVERSITY OF SYDNEY**

Sydney, Australia

LECTURER (Associate Professor) Naval Architecture
Department of Mechanical Engineering

1969 - 1972 **UNIVERSITY OF NEW SOUTH WALES**

Sydney, Australia

LECTURER, (Assoc. Professor) Naval Architecture (Part-Time)
School of Mechanical and Industrial Engineering

1970 - 1972 **KENNETH W. FISHER, CONSULTANT**

Sydney, Australia

INDEPENDENT CONSULTANT to marine and related transportation organizations in Australia.

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1967 - 1969 *STATE UNIV. OF N.Y. MARITIME COLLEGE*
Fort Schuyler, New York

ASSISTANT PROFESSOR
Naval Architecture and Mechanical Engineering

1964 - 1967 *UNIVERSITY OF MICHIGAN*
Ann Arbor, Michigan

RESEARCH ASSOCIATE (Part-Time)
TEACHING FELLOW, Departments of Engineering
Mechanics, Naval Architecture and Marine Engineering.

MEMBERSHIPS

THE ROYAL INSTITUTION OF NAVAL ARCHITECTS (FELLOW).

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS (LIFE MEMBER).

AMERICAN SOCIETY OF NAVAL ENGINEERS (MEMBER).

BOOKS AND PAPERS

Section A -- Liability and Marine Risks

Section B -- Ship Construction and Design

Section A -- Liability and Marine Risks

- "MARITIME PRODUCT LIABILITY" Editor of book with 13 contributing authors, published by Fisher Maritime, November 1979.
- "EVALUATION OF MARINE RISKS -- AN ANALYTICAL APPROACH" United States Propeller Club's North Atlantic Regional Seminar on Marine Liability, Newport, RI, April 1986.
- "DEVELOPMENTS IN MARINE AND SMALL CRAFT LIABILITIES" Editor and Contributing Author, (two of 18 chapters), published by Fisher Maritime, April 1983.
- "PRODUCT LIABILITY IN VESSEL CONSTRUCTION - REDUCING ITS POTENTIAL THROUGH CONTRACT MANAGEMENT". Seminar on Contract Management for Commercial Ship Construction and Repair, St. Louis, May 1979.
- "LIABILITY AVOIDANCE IN SHIP DESIGN AND CONSTRUCTION" Society of Naval Architects and Marine Engineers, New England, December 1979.
- "ASBESTOS: EXAMINING THE SHIPYARD'S RESPONSIBILITY." Fisher Maritime, August, 2001.

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- "ASBESTOS IN SHIPBUILDING -- UNITED STATES PRACTICES, 1930'S - 1970'S" Editor and Contributing Author, published by Fisher Maritime, November 1998.
- "DYNAMIC ASPECTS OF MARINE AND OFFSHORE LIABILITIES" Editor of book with six contributing authors, published by Fisher Maritime, March 1978.

Section B -- Ship Construction and Design

- "SHIPBUILDING SPECIFICATIONS: BEST PRACTICE GUIDELINES" *International Journal of Maritime Engineering*, Royal Institution of Naval Architects, London, UK March 2004.
- "MODERN CONTRACTS FOR MODERN YACHTS" *Proceedings of the Modern Yacht Conference*, Royal Institution of Naval Architects, Southampton, UK September 2003.
- "SHIPBUILDING CONTRACTS AND SPECIFICATIONS", Chapter 9 of *Ship Design and Construction*. Society of Naval Architects and Marine Engineers, Jersey City, NJ, September 2003.
- "AN OWNER'S MANAGEMENT OF SHIP CONSTRUCTION CONTRACTS" Royal Institution of Naval Architects conference *Newbuild 2000: The Role of the Naval Architect*. London, October 1995.
- "RESPONSIBILITIES PERTAINING TO DRAWING APPROVALS DURING SHIP CONSTRUCTION AND MODIFICATION" Society of Naval Architects and Marine Engineers, Great Lakes & Great Rivers Section, Cleveland, January 1991. Published in by the Society in *Marine Technology*, Nov. 1991
- "WHY EXCUSES TO IGNORE THE CONTRACT DO NOT FLOAT UPRIGHT" *Shipyards Technology News*. London, March 1996, Also published in *Society of Naval Architects and Marine Engineers, Singapore*, 22nd Annual Journal 1997/1998.
- "THE MIS-MANAGEMENT OF SHIP CONSTRUCTION, REPAIR AND DESIGN" International Marine Transit Association Annual Conference, New York, October 1984.
- "TECHNOLOGICAL AND COST ANALYSES OF A PROPOSED ICE-BREAKING L.N.G. CARRIER PROJECT" Society of Naval Architects and Marine Engineers, San Diego, December 1987.
- "ASSESSING FUTURE PROBLEMS OF THE TOWING INDUSTRY" 1986 Ocean and Coastal Towing Industry Conference, Atlantic City, NJ April 1986.
- "THE MANAGEMENT OF SHIP CONSTRUCTION, REPAIR AND DESIGN" Editor and Contributing Author (two of 16 chapters), published by Fisher Maritime, December 1980.
- "THE RELATIVE COSTS OF SHIP DESIGN PARAMETERS" Royal Institution of Naval Architects, *Trans.*, Vol. 116, 1974.
- "THE INCLUSION OF IMCO TANKER DESIGN CONSTRAINTS IN GENERAL OPTIMIZATION PROCEDURES" Society of Naval Architects and Marine Engineers, *Trans.*, Vol. 81, 1973.
- "METHODOLOGY FOR ECONOMY IN SHIP CONSTRUCTION" Korean Society of Naval Architects, Seoul, February 1973.

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- "OPTIMIZATION CONCEPTS IN SHIP DESIGN" Royal Institution of Naval Architects, Sydney, Australia, October 1972.
- "ECONOMIC OPTIMIZATION PROCEDURES IN PRELIMINARY SHIP DESIGN (APPLIED TO THE AUSTRALIAN ORE TRADE)" Royal Institution of Naval Architects, *Trans.*, Vol. 114, 1972.

DEPOSITIONS AND TRIAL TESTIMONY

OF DR. KENNETH W. FISHER

January 2000 – May 2005

<u>DATE</u>	<u>CASE</u>
03/08/05	Cyrus Calhoun v. American Standard, Bondex Int'l, <i>Kelly Moore</i> , et al James E. Blair v. American Standard, Bondex Int'l, <i>Kelly Moore</i> , et al • Deposition -- Galveston County TX 212th Judicial District Cause No. 03-CV-1248, Houston, TX
03/02/05	<i>Felham Enterprises (Cayman) Ltd</i> v. Certain Underwriters at Lloyds • Trial Testimony, US District Court, Eastern District of Louisiana, New Orleans, La., Case No. 02-1976, Section N4
01/26/05	<i>Christie Melvin</i> v. Mastercraft Boat Co., et al • Deposition, 01/26/05 -- Circuit Court of Talladega County, AL Civil Action No. CV-2001-577, Birmingham, Alabama
09/30/04	Carl Ricks v. <i>Triangle Fire, Inc.</i> and Gary Wenglowski • Video Deposition, Broward County FL 17th Judicial District Case No. 01-013473 (02), Florham Park, NJ
09/29/04	Benny Sims v. Bondex International, <i>Kelly Moore</i> , et al • Video Testimony -- Brazoria County TX 239th Judicial District Cause No. 22079-JG01, Florham Park, NJ
09/28/04	Carl Tucker v. Bondex Int'l, <i>Kelly Moore</i> , et al • Video Testimony -- Dallas County TX County Court at, Law No. 1, Cause No. CC-02-13950-A, Florham Park, NJ
07/28/04	Vernon Braaten v. Certainteed Corp., Kaiser Gypsum, et al • Deposition, 07/28/04 -- Brazoria County TX County Court, 149th Judicial Circuit, Cause No. 25489, Florham Park, NJ
07/26/04	Brian Trudo v. Regal Marine and Mecquiar's Products, • Deposition (continued), 12/18/03 -- Chittenden County, Vermont, Docket No. S-1474-01-CNC, Florham Park, NJ

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| 07/9/04 | Felham Enterprises (Cayman) Ltd v. Certain Underwriters at Lloyds <ul style="list-style-type: none"> • Deposition, US District Court, Eastern District of Louisiana, New Orleans, La., Case No. 02-1976, Section N4 | |
| 07/1-2/04 | Joseph Tully v. Interlake Steamship Company, <ul style="list-style-type: none"> • Trial Testimony, US District Court, Eastern District of Michigan, Detroit, MI, Case No. 02-70327 | |
| 06/22/04 | Teresa Maldonado v. Creative Woodworking Concepts, <ul style="list-style-type: none"> • Deposition – Will County, IL, Twelfth Judicial Circuit Case No. 94-L-13817, Rosemount, Illinois | |
| 03/04/04 | Holly Prince v. Norwegian Cruise Line, <ul style="list-style-type: none"> • Trial Testimony -- Miami-Dade County Court, Florida, 11th Judicial Circuit, Case No. 01-8803 CA 01, Miami, FL | |
| 02/03/04 | David & Rein Henderson v. Skier's Choice, et al <ul style="list-style-type: none"> • Deposition, 02/03/04 -- Harris County, TX District Court 133rd Judicial District, No. 200239767, Houston, TX | |
| 01/24/04 | Holly Prince v. Norwegian Cruise Line, <ul style="list-style-type: none"> • Deposition, 01/24/04 -- Miami-Dade County Court, Florida, 11th Judicial Circuit, Case No. 01-8803 CA 01, Coral Gables, FL | 11th |
| 01/19/04 | Vernon Franklin v. AC and S Inc., Kelly-Moore, et al <ul style="list-style-type: none"> • Deposition, 01/19/04 -- Dallas County TX County Court, 95th Judicial Circuit, No. 01-06238, Florham Park, NJ | |
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| 12/18/03 | Brian Trudo v. Regal Marine and Mecquiar's Products, West Marine Products, Regal Marine Industries <ul style="list-style-type: none"> • Deposition, 12/18/03 -- Chittenden County, Vermont, Docket No. S-1474-01-CNC, Florham Park, NJ | |
| 10/07/03 | William Carden v. AC and S Inc., Kelly-Moore, et al <ul style="list-style-type: none"> • Deposition, 10/07/03 -- Dallas County TX County Court, Cause No. 01-11375-A, Florham Park, NJ | |
| 09/04/03 | Joseph Tully v. Interlake Steamship Company <ul style="list-style-type: none"> • Deposition, 09/04/03 -- US District Court, Eastern District of Michigan, Case No. 02-70327, Florham Park, NJ | |
| 08/06/03 | Joseph Gurkin v. Certainteed Corporation, Kelly-Moore, et al <ul style="list-style-type: none"> • Deposition, 08/06/03 -- Dallas County TX County Court, No. 02-13136-E, Florham Park, NJ | |
| 07/02/03 | Harold Boak v. AK Steel Corporation, Kelly-Moore, et al <ul style="list-style-type: none"> • Deposition, 07/02/03 -- Orange County TX District Court, 260th Judicial District, No. D020474-C, Florham Park, NJ | |
| 06/25/03 | Ronald Eckardt v. Gladding-Hearn Shipbuilding Corporation <ul style="list-style-type: none"> • Deposition, 06/25/03 -- Federal Court, Eastern District of New York, No. CV 02 0467 (DGT)(VVP), New York, NY | |

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| 06/13/03 | United States v. Newport News Shipbuilding, Inc.
<ul style="list-style-type: none"> • Deposition, 06/13/03 -- Federal Court for the Eastern District of Virginia, Case No. 1:03CV 142-A, Washington, DC |
| 05/27/03 | Michael Miller v. Bondex Int'l, Kelly-Moore, et al
<ul style="list-style-type: none"> • Deposition, 05/27/03 -- District Court of Tarrant County, TX 141st Judicial District No. 141-193466-02, Floram Park, NJ |
| 05/20/03 | Tertia Robbins-Carrigan v. Kawasaki Motors Corp USA, et al
<ul style="list-style-type: none"> • Deposition, 05/20/03 -- Superior Court of NJ, Monmouth County No. MON-L-3113-01, Livingston, NJ |
| 01/09/03 | Wayne V. Wirt v. Kelly-Moore (Captioned: Richard Cheek et al v. Pittsburgh Corning Corporation et al)
<ul style="list-style-type: none"> • Deposition, 01/09/03 -- Dallas TX District Court, H-160th Judicial District, No. DV-99-08301-H, Florham Park, NJ |
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| 12/30/02 | Harry Appel v. Ted & Son's Forked River Marina.
<ul style="list-style-type: none"> • Deposition, 12/30/02 -- Superior Court, Camden County, New Jersey, No. CAM-L-3382-01, Florham Park, NJ |
| 07/24/02 | Daniel LaPlante v. Wellcraft Marine Corporation, et al.
<ul style="list-style-type: none"> • Deposition, 07/24/02 -- Superior Court for the County of Los Angeles, California, No. BC214129, Torrance, California. |
| 7/10/02 | State of New Jersey v. Barry M. Flowers
<ul style="list-style-type: none"> • Trial testimony, 7/10/02 -- Superior Court of New Jersey, Ocean County Indictment No. 01-06-889. |
| 6/10/02 | Douglas R. Fedder v. Barker Marine Ltd.
<ul style="list-style-type: none"> • Trial testimony, 6/10/02 -- U.S. District Court, Southern District of New York, 00 CIV 8341 (WHP) |
| 3/11/02 | Abdurrezak Eren v. Norwegian Cruise Lines, Ltd.
<ul style="list-style-type: none"> • Deposition, 3/11/02 -- Circuit Court, 11th Judicial Circuit, Miami-Dade County, Florida, 00-30995 CA 15 |
| 1/29/02 | Chester Carpenter v. Maersk Line Ltd. and U.S. Ship Management Inc.
<ul style="list-style-type: none"> • Trial Testimony, 1/29/02 -- U.S. District Court, Southern District of New York, 00 civ 4903 (BSJ) (RLE) |
| 1/25/02 | Patrick Fourmy (Sally Fourmy) v. Travel Systems Inc., Skipperliner Shipyards Inc., and Timothy Gaul Marine Design
<ul style="list-style-type: none"> • Deposition 1/25/02 -- Clark County District Court, Nevada, A401721 |
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| 12/11/01 | Douglas R. Fedder v. Barker Marine, Ltd.
<ul style="list-style-type: none"> • Deposition 12/11/01 -- U.S. District Court, Southern District of New York, 00 CIV 8341 (WHP) |
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| 6/28/01 | Metro Machine Corporation v. Lloyd's Underwriters, et al. <ul style="list-style-type: none">• Deposition 6/28/01 -- U.S. District Court, Eastern District of Virginia, Norfolk Division, Civ. 2:00cv617) |
| 4/3/01 | Thomas J. Manzo v. The City of New York <ul style="list-style-type: none">• Trial Testimony, 4/3/01 -- U.S. District Court, Southern District of New York, 98 Civ. 5234 98TT016639 |
| 1/15/01 | Matson Navigation Company Inc. v. Victoria Shipyards Co.Ltd. <ul style="list-style-type: none">• Testimony, 1/15/01 -- Supreme Court of British Columbia, Vancouver, Canada, Case No. C980901 |
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| 8/14/00 | Todd Shipyards Corporation v. Allianz International Insurance Co., Ltd. et. al. <ul style="list-style-type: none">• Deposition, 8/14-15/00 -- Superior Court, King County, State of Washington, Case No. 97-2-10795-4 |
| 8/2/00 | DiCasagrande v. Stolt Parcel Tankers (M/V Stolt Aquamarine) <ul style="list-style-type: none">• Deposition 8/2/00 -- Maryland State Court (Baltimore District) Case No. 24-C-98410367 |
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COMPENSATION

Dr. Fisher's time is compensated by payments to Fisher Maritime Transportation Counselors, Inc. at the rate of \$245.00/hour for office work, inspections, travel, deposition and trial testimony. Others in the firm are billed at lesser rates for their work on the same project.